S6161-L5-FSE-010

0910-LP-099-7600 **REVISION 1**

[*SGML Version See Change Record*]
TECHNICAL MANUAL

INSTALLATION OPERATION AND
MAINTENANCE INSTRUCTIONS

STEAM JACKETED KETTLES

LT - TYPE 1, STYLE 1, CLASS B
LTWT - TYPE 1, STYLE 2, CLASS B
LP - TYPE 1, STYLE 3, CLASS B

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

23 JUL 1987

RECORD OF CHANGES

CHANGE NO.	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY

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FOREWORD

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SAFETY SUMMARY

GENERAL SAFETY NOTICES THE FOLLOWING GENERAL SAFETY NOTICES SUPPLEMENT THE SPECIFIC WARNINGS AND CAUTIONS APPEARING ELSEWHERE IN THIS MANUAL. THEY ARE RECOMMENDED PRECAUTIONS THAT MUST BE UNDERSTOOD AND APPLIED DURING OPERATION AND MAINTENANCE OF THE EQUIPMENT COVERED HEREIN. SHOULD SITUATIONS ARISE THAT ARE NOT COVERED IN THE GENERAL OR SPECIFIC SAFETY PRECAUTIONS, THE COMMANDING OFFICER OR OTHER AUTHORITY WILL ISSUE ORDERS AS DEEMED NECESSARY TO COVER THE SITUATION.

DO NOT REPAIR OR ADJUST ALONE UNDER NO CIRCUMSTANCES SHOULD REPAIR OR ADJUSTMENT OF ENERGIZED EQUIPMENT BE ATTEMPTED ALONE. THE IMMEDIATE PRESENCE OF SOMEONE CAPABLE OF RENDERING AID IS REQUIRED. BEFORE MAKING ADJUSTMENTS, BE SURE TO PROTECT AGAINST GROUNDING. IF POSSIBLE, ADJUSTMENTS SHOULD BE MADE WITH ONE HAND, WITH THE OTHER HAND FREE AND CLEAR OF EQUIPMENT. EVEN WHEN POWER HAS BEEN REMOVED FROM EQUIPMENT CIRCUITS, DANGEROUS POTENTIALS MAY STILL EXIST DUE TO RETENTION OF CHARGES BY CAPACITORS. CIRCUITS MUST BE GROUNDED AND ALL CAPACITORS DISCHARGED PRIOR TO ATTEMPTING REPAIRS.

TEST EQUIPMENT MAKE CERTAIN TEST EQUIPMENT IS IN GOOD CONDITION. IF A TEST METER MUST BE HELD, GROUND THE CASE OF THE METER BEFORE STARTING MEASUREMENT; DO NOT TOUCH LIVE EQUIPMENT OR PERSONNEL WORKING ON LIVE EQUIPMENT WHILE HOLDING A TEST METER. SOME TYPES OF MEASURING DEVICES SHOULD NOT BE GROUNDED; THESE DEVICES SHOULD NOT BE HELD WHEN TAKING MEASUREMENTS.

INTERLOCKS INTERLOCKS ARE PROVIDED FOR SAFETY OF PERSONNEL AND EQUIPMENT AND SHOULD BE USED FOR THE PURPOSE INTENDED. THEY SHOULD NOT BE BATTLE SHORTED OR OTHERWISE MODIFIED EXCEPT BY AUTHORIZED MAINTENANCE PERSONNEL. DO NOT DEPEND SOLELY UPON INTERLOCKS FOR PROTECTION. WHENEVER POSSIBLE, DISCONNECT POWER AT POWER DISTRIBUTION SOURCE.

CAUTIONS TO USER

STEAM SUPPLY SHOULD NOT EXCEED 55 PSIG.

DO NOT TURN ON STEAM UNLESS FOOD OR WATER IS IN KETTLE.

DO NOT TAMPER WITH OR OBSTRUCT SAFETY VALVE.

DO NOT PUT WATER IN A HOT, DRY KETTLE.

DO NOT CLEAN WITH ABRASIVE MATERIALS.

WARNING

- BEFORE REPAIRING, CLEANING, OR REPLACING PARTS, CLOSE ALL STEAM, WATER, AND CONDENSATE VALVES (INCLUDING APPLICABLE VALVES ON CUSTOMER SUPPLY PIPING). (Page 1-3)

CHAPTER 1

SECTION
GENERAL INFORMATION

1.1

LEGION STEAM KETTLES ARE MANUFACTURED FROM SEAMLESS DRAWN, ONE PIECE STAINLESS STEEL BLANKS IN GAUGES REQUIRED TO QUALIFY FOR ASME INSPECTION, AND STAMPING. THERE ARE NO JOINTS, WELDS OR GRIND MARKS IN LEGION SHELLS. THIS OUTSTANDING DESIGN FEATURE SETS LEGION KETTLES APART FROM COMPETITIVE DESIGNS USING SHELLS MADE OF WELDED SECTIONS. A SEAMLESS DRAWN SHELL IS THE SUPERIOR DESIGN FOR SANITARY AND STRUCTURAL REQUIREMENTS AND ELIMINATES COMPLETELY THE POSSIBILITY OF WEAKENED JOINTS DUE TO EXCESSIVE GRINDING OR CORROSIVE ATTACK DUE TO IMPERFECTIONS IN THE WELD. ALL LEGION KETTLES ARE MANUFACTURED OF 18-8 STAINLESS STEEL TYPE 304, FINISHED IN A #4 COMMERCIAL GRIT AND COMPOUNDED TO A SANITARY CUSTOM LUSTRE.

1.2

ALL STEAM JACKETED KETTLES FEATURE LEGION'S DIE FORMED ONE PIECE INTEGRAL OPEN SANITARY BEAD DESIGN PREFERRED BY ALL HEALTH AUTHORITIES AND RESULTING IN A TRULY SANITARY, EASY TO CLEAN, YET STRUCTURALLY RIGID KETTLE RIM. THE OPEN RIM DESIGN, RETURNED 180 DEGREES, IS A SIGNIFICANT IMPROVEMENT OVER THE HARD TO CLEAN EARLIER, WIRE REINFORCED RIM, THAT MUST BE CONTINUOUSLY WELDED AND GROUND IN ORDER TO ELIMINATE CREVICES AND JOINTS IN INACCESSIBLE PLACES.

1.3

ALL LEGION PRESSURE KETTLES, STEAM, GAS OR ELECTRIC ARE DESIGNED AND BUILT IN COMPLIANCE WITH THE REQUIREMENTS OF THE LATEST ASME CODE, SECTION VIII FOR UNFIRED PRESSURE VESSELS AND ARE SO STAMPED AND/OR SHOP INSPECTED, IF SO SPECIFIED.

1.4

STEAM JACKETED KETTLES FOR SHIPBOARD USE ARE FOR USE WITH 55 PSI (MAX) STEAM.

SECTION
INSTALLATION INSTRUCTIONS

2.1 KETTLE MOUNTING- LP SERIES

2.1.1 LEVEL DESIGNATED AREA FOR KETTLES MOUNTING ON PEDESTAL BASE.

2.1.2 TRANSFER DRILL HOLES LOCATED ON PEDESTAL BASE TO MOUNTING SURFACE FOR 3/B″ BOLTS, FOR SCREWS 4 REQUIRED (SCREWS OR BOLTS SUPPLIED BY OTHERS).

2.1.3 APPLY STYLASTIC (DOW CORNING #RTU-73200 OR EQUIVALENT) AROUND PERIMETER OF PEDESTAL BASE AND MOUNTING SURFACE TO CLOSE EXISTING CREVICES.

2.2 KETTLE MOUNTING- LT SERIES

2.2.1 TRANSFER HOLES FOR 3/8″ BOLTS FROM FLANGED FEET TO THE MOUNTING SURFACE. INSTALL KETTLE ON BOLTS (SUPPLIED BY OTHERS).

2.3 KETTLE MOUNTING- LTWT SERIES.

2.3.1 INSTALL WALL BRACKETS ON BOLTS. SEE DRAWING R-325, P. 13 FOR LOCATION OF BOLTS.

2.4 PLUMBING

2.4.1 ASSEMBLE PLUMBING PARTS PER DRAWING A-4, P.15, CONNECT PLUMBING ASSEMBLIES TO KETTLE.

2.4.2 CONNECT STEAM INLET PLUMBING TO STEAM SUPPLY LINE. CONNECT CONDENSATE PLUMBING TO WASTE LINE OR DRAIN.

SECTION

OPERATING INSTRUCTIONS

3.1

WASH KETTLE BEFORE AND AFTER EACH USE WITH HOT SOAPY WATER AND RINSE THOROUGHLY WITH CLEAN HOT WATER.

3.2

WHEN HEATING A COLD KETTLE, TURN THE STEAM ON GRADUALLY, THUS ALLOWING THE KETTLE TO BECOME WARM BEFORE FULL PRESSURE IS APPLIED. AFTER KETTLE BECOMES WARM, AND BEFORE APPLYING FULL PRESSURE, OPEN SAFETY VALVE MOMENTARILY TO RELEASE ANY AIR TRAPPED WITHIN THE JACKET.

3.3

CLEAN STRAINER, DRAWOFF VALVE, AND DRAWOFF TUBE THOROUGHLY AFTER EACH USE. TO CLEAN DRAWOFF VALUE AND TUBE REMOVE THE FRONT END OF THE VALVE AND BRUSH-SCRUB WITH HOT WATER.

3.4

LEAVE COVER AND DRAIN OPEN WHEN NOT IN USE.

SECTION

REPAIR

WARNING

- BEFORE REPAIRING, CLEANING, OR REPLACING PARTS, CLOSE ALL STEAM, WATER, AND CONDENSATE VALVES (INCLUDING APPLICABLE VALVES ON CUSTOMER SUPPLY PIPING).

4.1

THE STRAINER MAY BE CLEANED OR THE BASKET REPLACED, WITHOUT REMOVING IT FROM THE PIPING SYSTEM. SEE P.5.

4.2

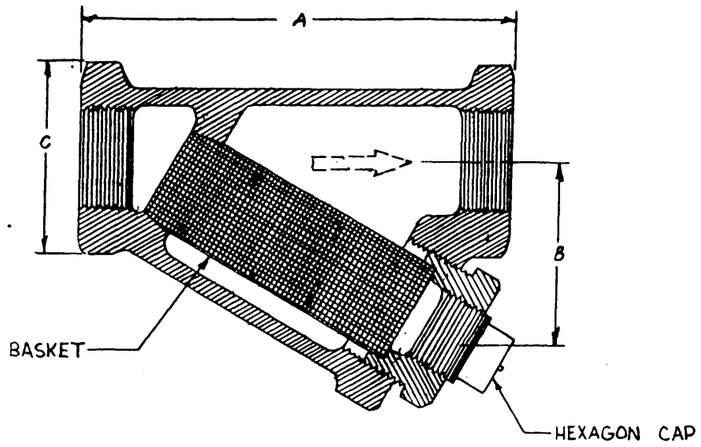
ALL LEGION SUPPLIED VALUES, TRAPS AND FITTINGS HAVE SCREWED CONNECTIONS. IF A LEAK OCCURS AT A CONNECTION, REMOVE APPROPRIATE COMPONENTS AND INSPECT THEIR THREADS. IF THREADS ARE DAMAGED, REPLACE COMPONENTS; IF NOT, REINSTALL PIPING. TEFLON TAPE SHOULD BE USED ON ALL THREADED CONNECTIONS.

4.3

IF THE FILL FAUCET LEAKS, REPLACE WASHER(S) IN FAUCET.

4.4

IF THE DRAWOFF FAUCET LEAKS, REMOVE NUT AND REPLACE STEM, SEE P.6. IF THE FAUCET BECOMES DAMAGED, REPLACE THE FAUCET. SEE P. 7.



SIZE NPT	A	B	C	CAT. NO. (B.I.)	CAT. NO. (I.C.P.)
1/2	3 3/4	1 1/2	1 5/8	450023	440360
3/4	4 1/2	1 7/8	2 1/16	450000	440361
1	5 3/8	2 3/8	2 3/8	450193	450493

STRAINERS

Line strainers are used on steam operated equipment to protect a trap, a steam valve or a solenoid valve from becoming clogged due to impurities floating in the steam.

When steam lines are very dirty, sludge and other material may clog a strainer completely. To clean out a strainer, the hexagon cap must be removed and the brass screen thoroughly cleaned.

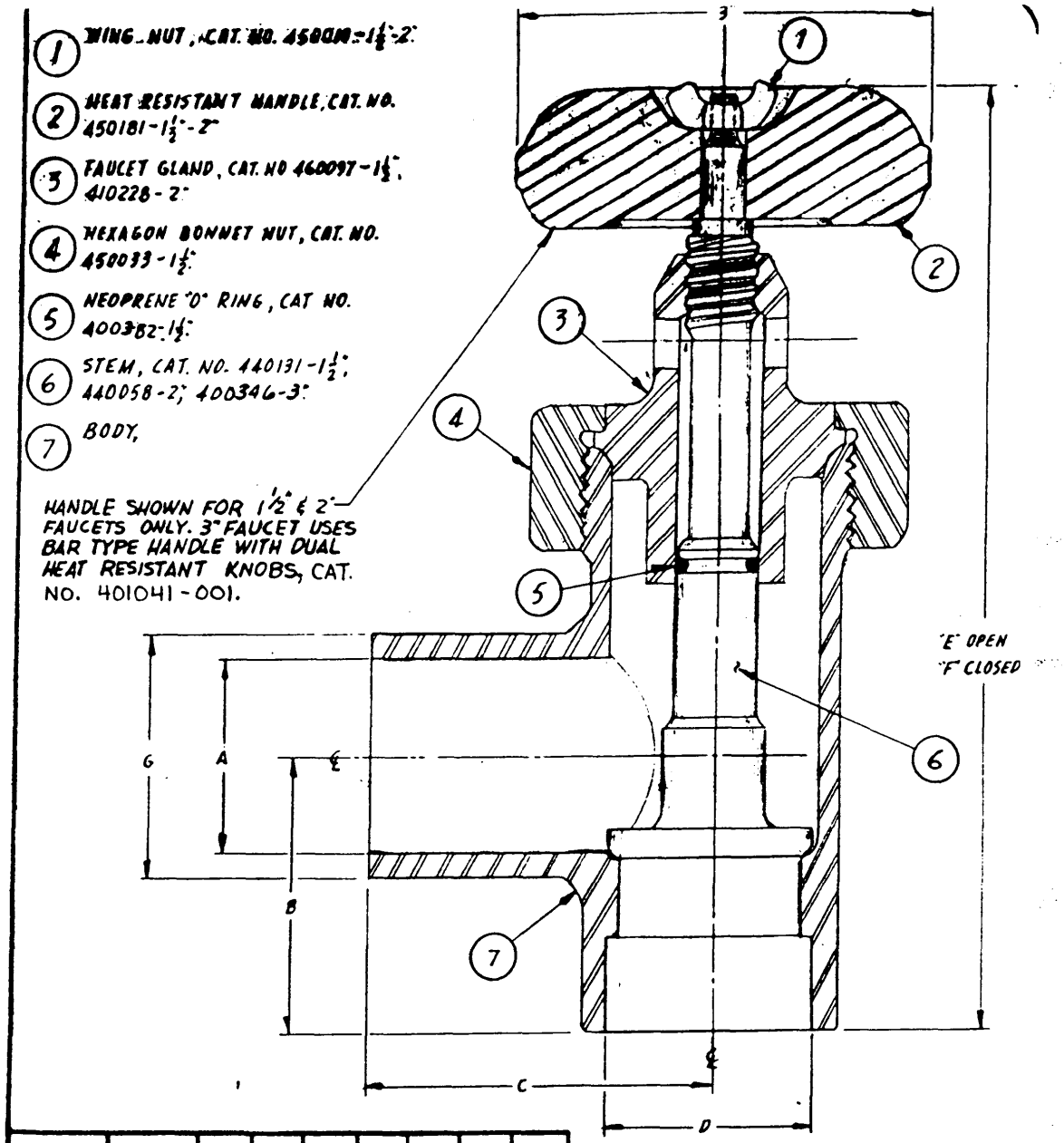
When replacing the inner strainer basket care must be taken to bottom the tapered end of the screen firmly into the cast body and screw the hexagon cap sufficiently deep into the body to arrest the internal strainer in a locked position. If the screen is allowed to float freely within the strainer, the entire purpose of the strainer is defeated.

The strainers are rated for 250 lbs and made in cast iron. They can be had in chromeplated or gray paint finish. We employ a special brass screen on the inside with .018 perforations. Strainers have an arrow cast on the outside of the body to indicate direction of flow.

NOTE: When ordering parts, always refer to complete catalog number, serial number and capacity of the kettle involved.

Cast Iron strainers gray paint finish or chromeplated as used on LEGION steam jacketed kettles.

LEGION EQUIPMENT CO INC		
DWN: L.A.	DATE 1-1-67	TS 116 A
APP'D	SCALE ~	
REV: A	ECN 728	
REV:	REV:	



SIZE	CAT. NO.	A	B	C	D	E	F	G
1½"	440057	1⅜	2	2½	1½	7½	6½	1 21/32
2"	440019	1⅝	2 25/32	3⅛	2	10¼	6 1/16	2 7/32
3"	440235	2⅞	3 7/16	4	3	13¾	10⅛	3⅜

TS-117A (Sheet 1 of 2)

In order to install a new faucet of the plug or compression type, remove all parts from the faucet leaving only the faucet body on the draw-off tube.

1. Heat up solder joints in rear of the faucet with a blow torch (Benz O Matic) until the solder starts dripping. Tap faucet body gently from the rear while welding; use a rubber mallet or a piece of wood and make sure the faucet is not allowed to drop.

2. After the faucet body has been removed, add acid (All State Duzall) to the draw-off tube. Heat it slightly and add solder for retinning. Wipe off excess solder so that the draw-off tube is completely tinned and smooth.

3. To install new faucet, likewise remove all inner parts and handles and brush some acid on the recessed seating opening in the back of the faucet and add solder. Wipe inside clean so that the entire recessed bore is tinned. This coat of tin must be very thin and care must be taken that neither acid nor tin find their way into the valve body.

4. Now, brush acid on the faucet and draw-off tube and slip faucet body gently onto draw-off tube making sure that the body bottoms on the draw-off tube.

5. Apply the blow torch and heat slightly all around. Add solder while heating. Very little solder is needed. If too much soldor is applied, it will enter into the valve seat region and this must be avoided. When finished, cool water and wash clean. Use 50 - 50 solder.

6. It is helpful to tilt the kettle forward so that the draw-off tube is close to a vertical position. However, this is not absolutely necessary if the mechanic is skilled in soldering procedures.

For detailed dimensions of draw-off faucets, refer to:

Drawing TS-117A SH 1	Dairy metal 1½" (#440057) and 2" (#440019) compression faucets (standard)
**Drawing TS-119A	Dairy metal 1½" (#440017) plug type draw-off faucet (standard) - Obsolete as of 1/1971
Drawing TS-118A	Dairy metal 1½" (#440017) and 2" (#440073) plug type draw-off faucets with bayonet lock

INSTRUCTIONS FOR INSTALLING NEW TANGENT DRAW-OFF COMPRESSION TYPE FAUCET OR PLUG TYPE FAUCET ON LEGION KETTLES

LEGION EQUIPMENT CO., INC.

DWN ALO	DATE 6/2/71	TS-117
APP CBR	DATE 6/2/71	
ECN 715	REV. B	SH 2 of 2

SECTION

MAINTENANCE

5.1

CHECK SAFETY VALUE PERIODICALLY TO INSURE THAT IT IS FUNCTIONING PROPERLY.

5.2

CHECK ALL GLOBE AND/OR GATE VALVES TO INSURE THAT THEY ARE OPENING AND CLOSING PROPERLY.

5.3

CHECK STRAINERS, CHECK VALVE AND BUCKET TRAP TO ENSURE THAT THE STEAM LINES ARE NOT CLOGGED.

5.4

KETTLE SHOULD BE WASHED BEFORE AND AFTER EACH USE WITH HOT SOAPY WATER AND RINSED THOROUGHLY WITH CLEAN WATER. DRY THOROUGHLY.

5.5

CLEAN STRAINER (KETTLE) BEFORE AND AFTER EACH USE WITH HOT SOAPY WATER AND RINSE THOROUGHLY.

5.6

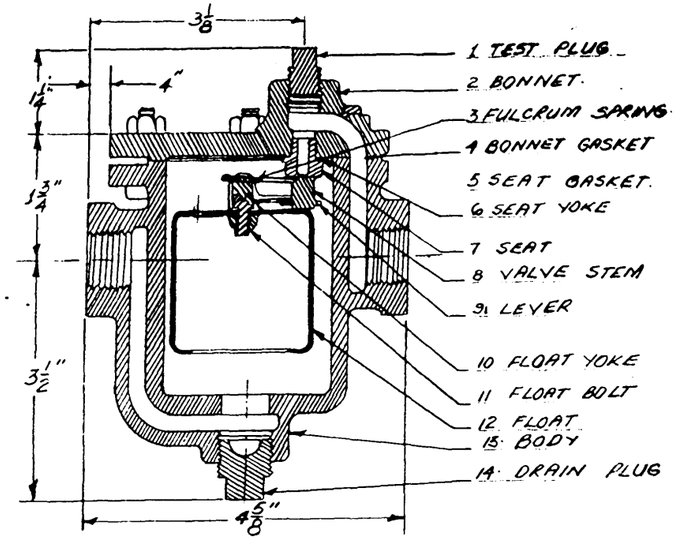
THE STAINLESS STEEL SURFACE OF THE UNIT MAY BE POLISHED WITH ANY REPUTABLE COMMERCIAL STAINLESS STEEL CLEANER.

5.7

NEVER USE STEEL WOOL OR ANY ABRASIVE FOR CLEANING.

5.8

THE KETTLE MAY BE HYDROSTATICALLY PRESSURE TESTED WHILE IN LINE. UNDER NO CIRCUMSTANCES SHOULD THE KETTLE BE EXPOSED TO A TEST PRESSURE EXCEEDING 95 PSIG. BEFORE PRESSURE TESTING, THE RELIEF VALVE, ELBOWS, AND NIPPLE (ITEMS 1, 2, AND 3; P.15) MUST BE REMOVED FROM THE RELIEF VALVE COUPLING AND A 3/4″, 150 LB PIPE PLUG INSTALLED.



The #60 trap has the purpose to discharge condensate on the discharge side of all steam jacketed kettles. The traps are rated for operating pressures up to 250 lbs. and are furnished with a seat for intermittent pressure from 75 to 125 P.S.I.

FUNCTION OF INVERTED BUCKET TRAPS:

As the steam condensate enters into the trap body, rising in the main chamber and bucket which is open at the bottom, the air in the bucket is pushed out through the air vent. This makes the bucket lose its boyancy. Eventually the bucket drops and opens the discharge port by means of a linkage system. The water is now pushed out by the steam pressure and when it is completely discharged, the bucket, regaining its original boyancy, is rising again closing the discharge orifices. In similar manner as before, water is now again accumulating in the trap chamber, repeating the process.

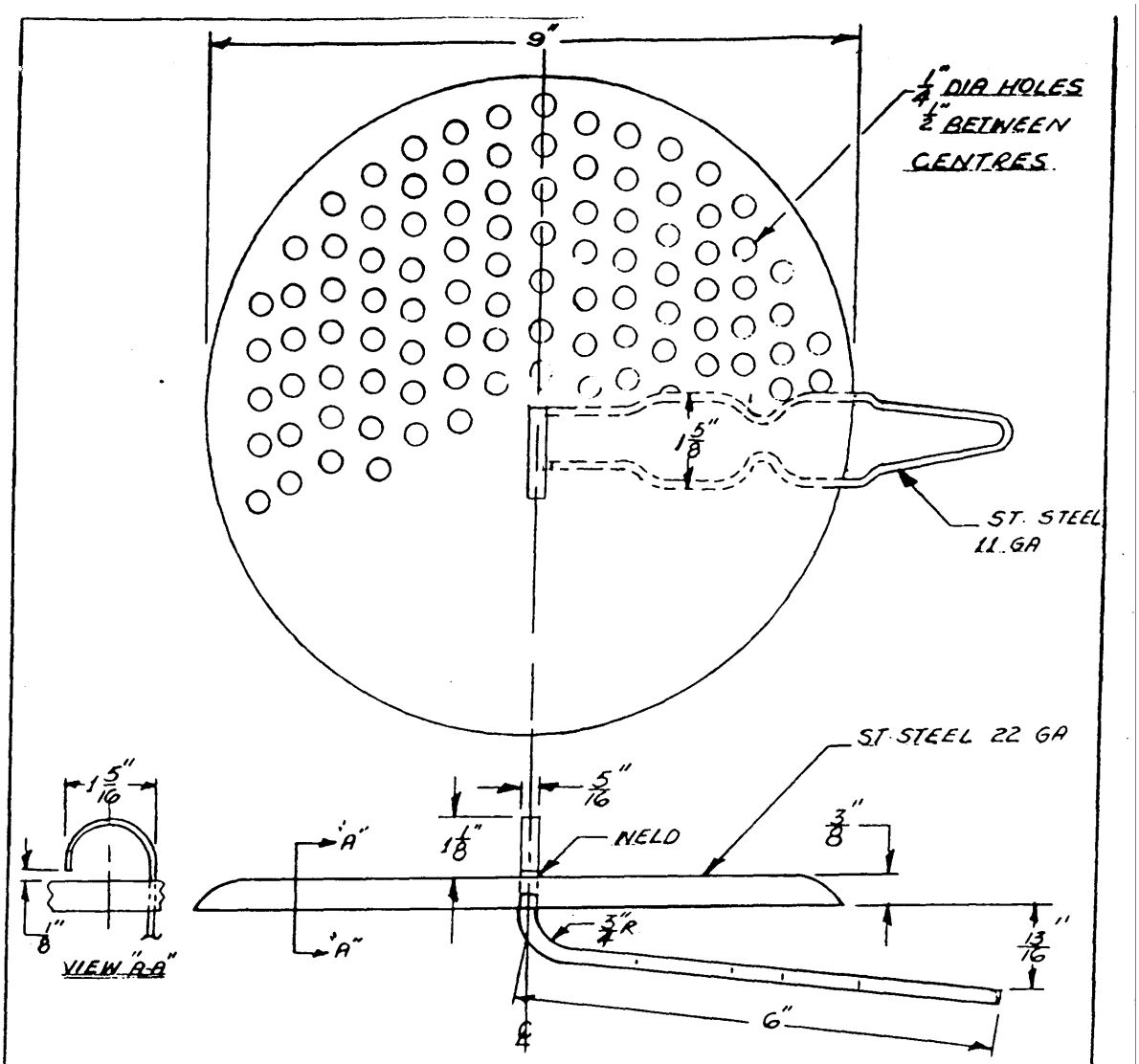
The material of the trap is high grade cast iron with the seating material in stainless steel. All internal parts are brass and copper. The finish is either chromeplated or painted.

In order to protect the smooth operation of the trap, a strainer should be installed ahead of the trap.

Steam traps must be periodically cleaned of sludge and this is done by removing drain plug #14.

The discharge capacity of the #60 trap with a steam pressure range from 20 to 50 lbs. is approximately 1000 lbs. of water per hour.

440205 1/2 NPT } chromeplated 440206 3/4 NPT LEGION #60 intermittent inverted bucket trap, steam 1/2 & 3/4 NPT	LEGION EQUIPMENT CO INC DWN L.A. DATE 1-1-67 APP'D SCALE ~ REV: REV: REV: REV: TS114A



These strainers are of the self-locking type and are inserted into the tangent draw-off tube. In order to lock them securely into place, the strainer must be pulled forward in the direction of the draw-off tube.

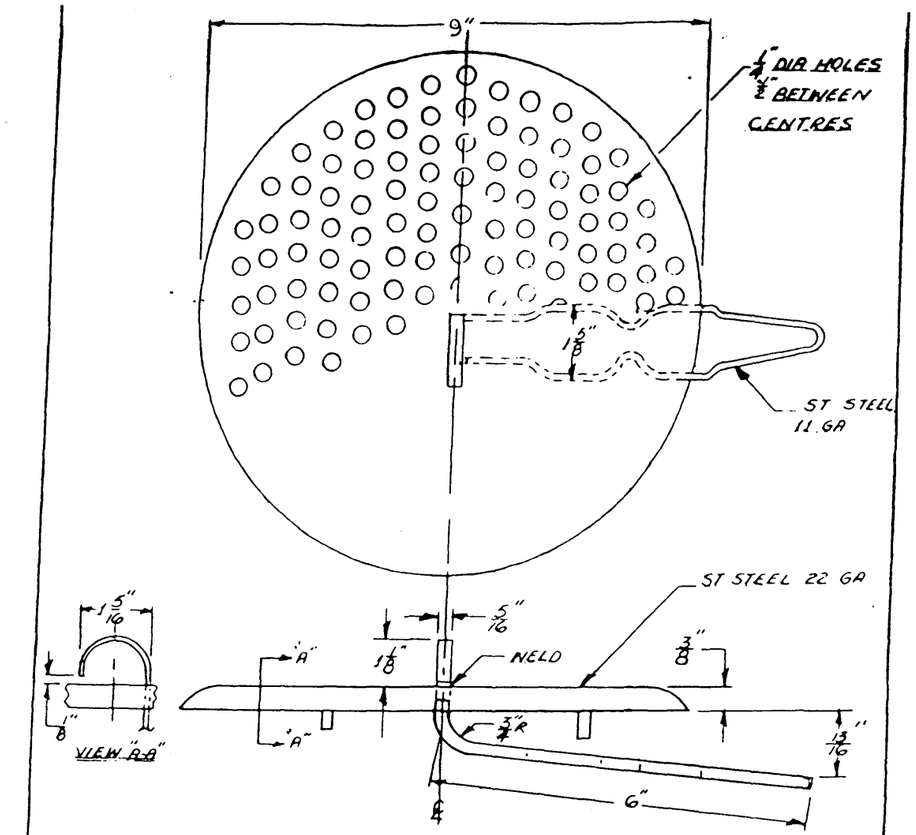
When the strainer is properly inserted the peripheral edge of the 9" strainer plate must contact the inner kettle shell.

If the prongs fit too tightly or too loosely, the spring action of the prong can be corrected by spreading or closing the prong.

NOTE: When ordering parts, alwaysrefer to complete catalog number, serial number and capacity of the kettle involved.

Legion standard tangent strainer to fit all steam jacketed kettles with tangent draw-off faucets [illegible]	LEGION EQUIPMENT CO. INC.	
	DWN: L.A	DATE 1-1-67
	APP'D	SCALE ~
		TS

TS-122A



These strainers are of the self-locking type and are inserted into the tangent draw-off tube. In order to lock them securely into place, the strainer must be pulled forward in the direction of the draw-off tube.

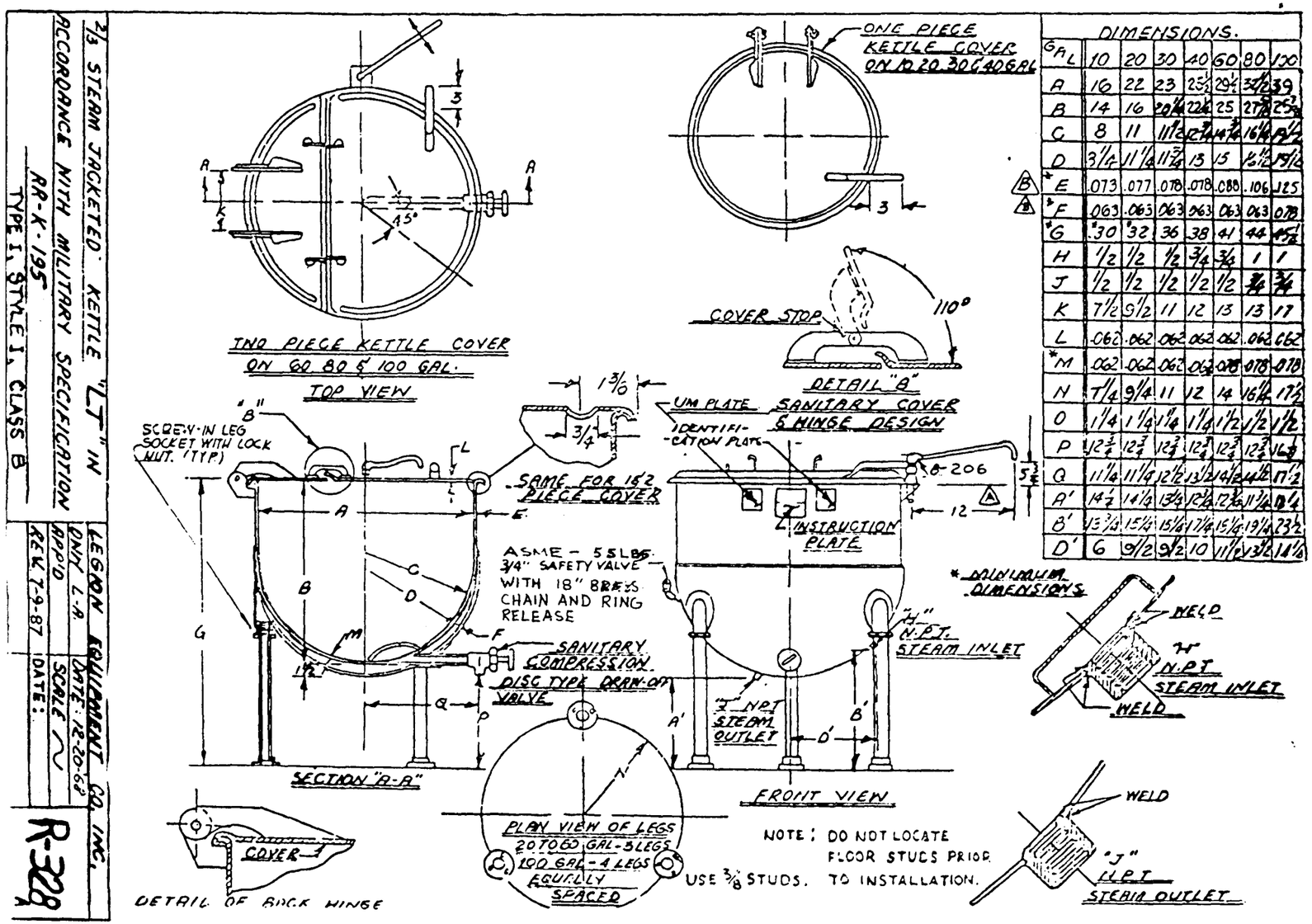
When the strainer is properly inserted the peripheral edge of the 9" strainer plate must contact the inner kettle shell.

If the prongs fit too tightly or too loosely, the spring action of the prong can be corrected by spreading or closing the prong.

NOTE: When ordering parts, alwaysrefer to complete catalog number, serial number and capacity of the kettle involved.

P/N 404939-001

Legion standard tangent strainer to fit all steam jacketed kettles with 3" tangent draw-off faucets.	LEGION EQUIPMENT CO. INC.	
	DWN: L.A	DATE 1-1-67
	APP'D	SCALE ~
	REV:	REV:
	REV:	REV:
		TS 122 A SHEET 1A



DIMENSIONS.							
GAL	10	20	30	40	60	80	100
A	16	22	23	25 3/4	29 1/2	32 1/2	39
B	14	16	20 1/4	22 1/4	25	27 1/8	25 3/4
C	8	11	11 1/2	12 3/4	14 3/4	16 1/4	19 1/2
D	3 1/4	11 1/4	11 3/4	13	15	15 1/2	19 1/2
*E	.073	.077	.078	.078	.080	.106	.125
*F	.063	.063	.063	.063	.063	.063	.078
*G	30	32	36	38	41	44	45 1/2
H	1/2	1/2	1/2	3/4	3/4	1	1
J	1/2	1/2	1/2	1/2	1/2	3/4	3/4
K	7 1/2	9 1/2	11	12	13	13	17
L	.062	.062	.062	.062	.062	.062	.062
*M	.062	.062	.062	.062	.078	.078	.078
N	7 1/4	9 1/4	11	12	14	16 1/2	17 1/2
O	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2
P	12 3/4	12 3/4	12 3/4	12 3/4	12 3/4	12 3/4	16 1/2
Q	11 1/4	11 1/4	12 1/2	13 1/2	14 1/2	14 1/2	17 1/2
A'	14 1/2	14 1/2	13 1/4	12 3/4	12 3/4	11 3/4	10 1/4
B'	13 3/4	15 1/2	15 1/2	17 1/4	15 1/2	19 1/2	23 1/2
D'	6	9 1/2	9 1/2	10	11 1/2	13 1/2	18 1/2

R-328A

MODEL LTWT

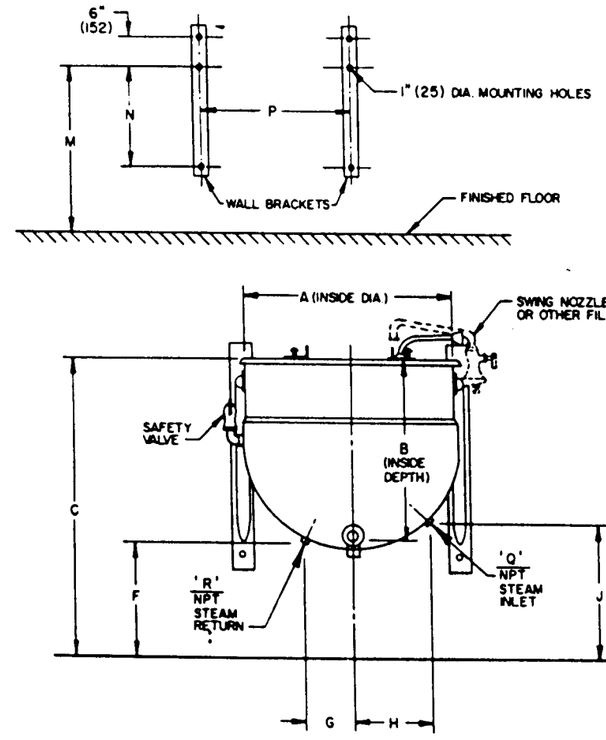
DIRECT STEAM WALL MOUNTED STATIONARY KETTLE

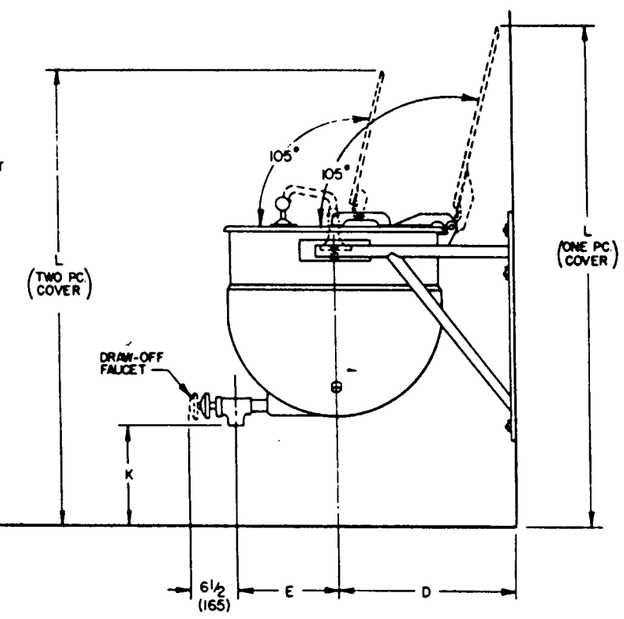
DIMENSIONS GALLONS/INCHES

CAP.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
10	16	14	31 1/4	19 1/2	10 3/4	15 7/8	4 1/2	6 1/4	17 1/4	13 3/4	—	25 1/2	16 1/2	16 1/2	1/2	1/2
20	22	16	33 1/4	19 1/2	13	16	4 1/2	8 3/8	18 5/8	13 3/4	58 3/4	27	16 1/2	22 1/2	1/2	1/2
30	23	20 1/4	36 1/4	19 1/2	13	15 3/4	4 1/2	8 3/4	17 1/2	12 1/2	62 3/4	30	16 1/2	23 1/2	1/2	1/2
40	25 1/2	22 1/4	38 1/2	19 1/2	13	15 1/4	5 1/2	9 3/4	18	12 3/4	67 1/2	32 1/4	16 1/2	26	3/4	1/2
50	29 1/2	21 3/4	38	24 1/2	14	15 1/8	5 1/2	11 1/8	18 5/8	12 3/4	58	32 1/2	21 1/2	30	3/4	1/2
60	29 1/2	25	41 1/4	24 1/2	14	15 1/8	5 1/2	11 1/8	18 5/8	12 3/4	61 1/2	35	21 1/2	30	3/4	1/2
80	32 1/2	27 5/8	43 7/8	24 1/2	14	15 1/8	6 1/4	12 1/4	19	12 3/4	67 3/8	37 5/8	21 1/2	33	1	3/4
100	39	25 7/8	42 1/8	29 1/2	17 1/2	15 1/2	7 3/4	14 1/4	20	12 3/4	69 7/8	35 7/8	21 1/2	39 1/2	1	3/4

DIMENSIONS LITERS/MILLIMETERS

CAP.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
38	406	356	794	495	273	403	114	159	438	349	—	648	419	419	—	—
76	559	406	845	495	330	406	114	213	473	349	1492	686	419	572	—	—
114	584	514	921	495	330	400	114	222	445	318	1594	762	419	597	—	—
151	648	565	978	495	330	387	140	248	457	324	1715	819	419	660	—	—
189	749	552	965	622	356	384	140	283	473	324	1473	826	546	762	—	—
227	749	635	1048	622	356	384	140	283	473	324	1562	889	546	762	—	—
303	826	702	1114	622	356	384	159	311	483	324	1711	956	546	838	—	—
379	991	657	1070	749	445	394	197	362	508	324	1775	911	546	1003	—	—





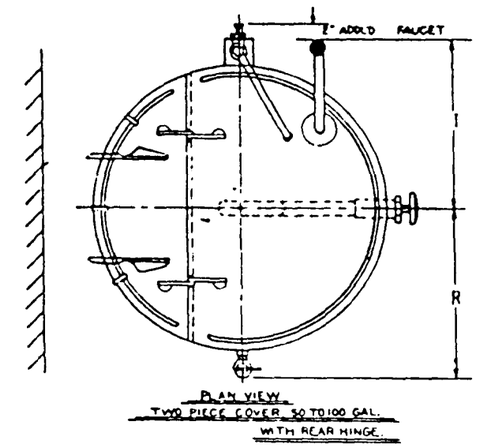
NOTE;
SAFETY VALVE IS PROVIDED WITH 18" LONG BRASS CHAIN AND RELEASE RING.

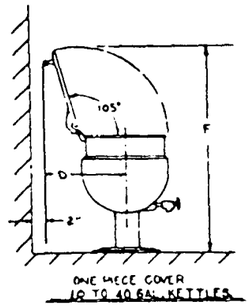
LEGION EQUIPMENT CO.
DWN: MACK
DATE: 8-2-88
R-162c-M

LEGION MODEL – L.P.

SUGGESTED ROUGHING FOR ⅔ STEAM JACKETED DEEP TYPE KETTLE ON PEDESTAL BASE.

AS PER RR-K-195 ; TYPE I, STYLE 3, CLASS B





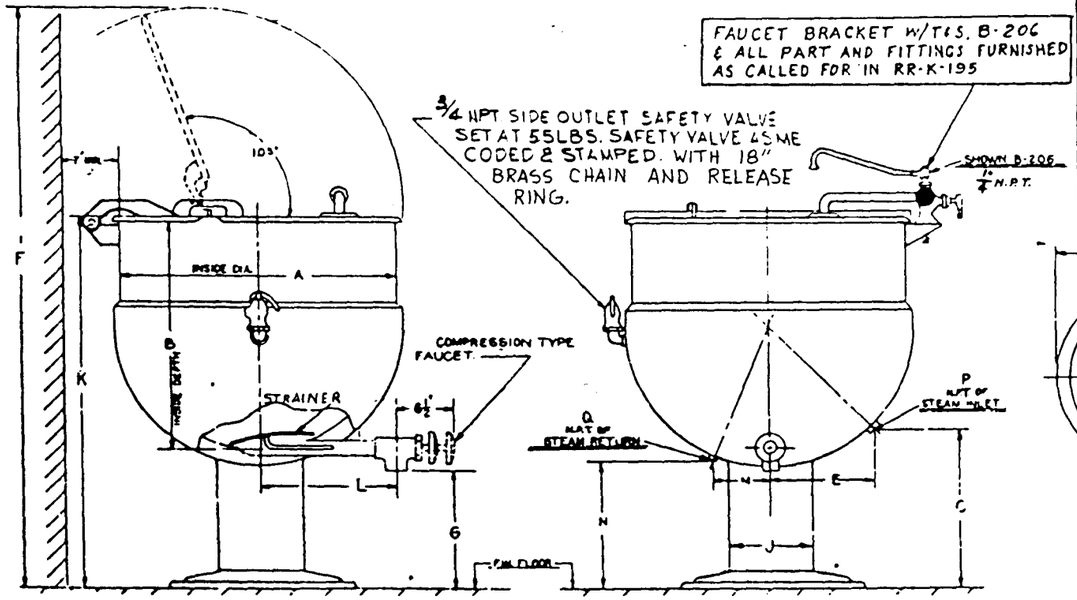
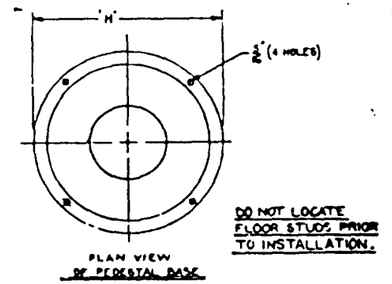
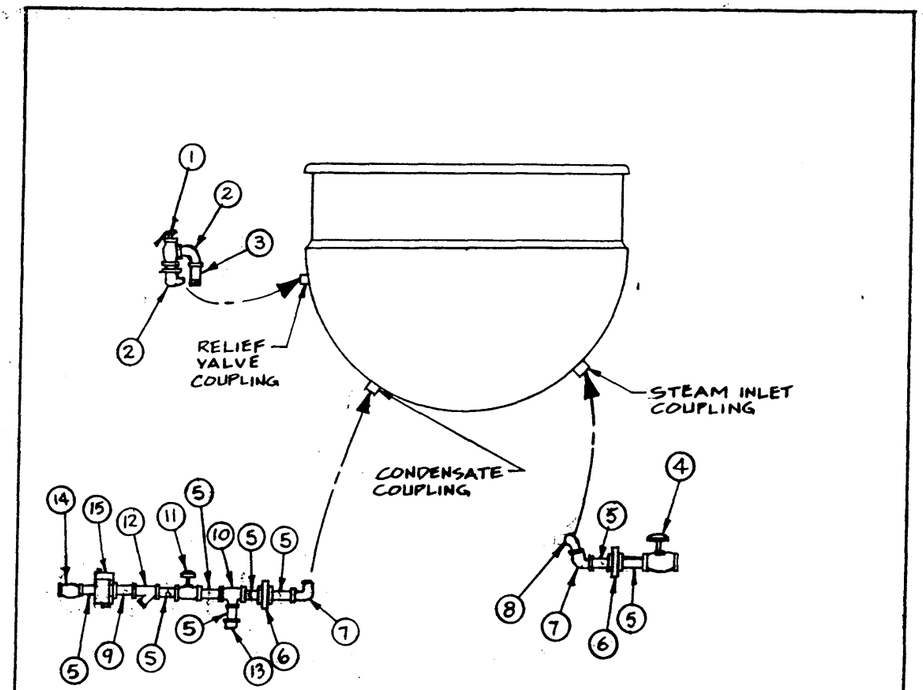


TABLE OF DIMENSIONS								
DIM. IN INCHES	CAPACITY 10 QUART	20	30	40	50	60	80	100
A	16	22	23	25½	29½	29½	32½	39
B	14	16	20¼	22¼	21¾	25	27⅜	25⅜
C	18	19	18¼	18½	19¼	19¼	19½	23½
D	X	17⅛	18	20½	23	23	25½	29½
E	5½	8	9	9	10½	10½	11½	14¼
F	X	57¾	61¾	66¾	61	64¼	68¾	77¼
G	14	14	13	13	13	13	13	16⅛
H	17	17	17	20	20	20	20	24
I	11	14	14½	15¾	17¾	17¾	19¼	22½
J	6	6	6	8	8	8	9	9
K	31¼	33¼	36½	38½	38	41½	43⅞	45¼
L	10¾	13	13	13	14	14	14	17½
M	4½	5	5	5½	6	6	6½	6½
N	17	17	16	16	16	16	16½	18¼
P	½	½	½	¾	¾	¾	1	1
Q	½	½	½	½	½	½	¾	¾
R	11½	14½	15	16¼	18¼	18¼	19¾	23



LEGION EQUIPMENT CO. INC.	
DRAWN R.C.	DATE: 11-1-68
SCALE	REV: 7-9-87
APPD.	DRAWING NO. R322A

R-322A



CONDENSATE

NOTE: 10, 20, 30, 40 & 60 GAL. ½" IPS
80 & 100 GAL. ¾" IPS

STEAM INLET

NOTE: 10, 20 & 30 GAL. ½" IPS
40 & 60 GAL. ¾" IPS
80 & 100 GAL. 1" IPS

PIPING PARTS

ITEM NO.	QTY	DESCRIPTION
1	1	VALVE, SAFETY BCP 55#
2	2	ELBOW, ST BCP ¾×90°
3	1	NIPPLE, ICP ¾ × 4" LG.
4	1	VALVE, GLOBE BCP
5	8	NIPPLE, ICP CLOSE
6	2	UNION, ICP
7	2	ELBOW, ST BCP × 90°
8	1	ELBOW, ST BCP × 45°
9	1	NIPPLE, ICP 2" LG.
10	1	TEE, ICP
11	1	VALVE, GATE BCP
12	1	STRAINER, "Y" ICP
13	1	CAP, PIPE ICP
14	1	VALVE, SWING CHECK BCP
15	1	STEAM TRAP ICP

LEGION EQUIPMENT COMPANY

DWN: CA MACK	SCALE: N.T.S.	A-4
CHKD:	REV.	
DATE:	REV.	

SECTION
TROUBLE SHOOTING

6.1

OPEN STEAM SUPPLY VALVE TO KETTLE (ITEM 4, P.20), OPERATE SAFETY VALVE LEVER.

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	REMEDY
STEAM DISCHARGED FROM SAFETY VALVE	CLOGGED STRAINER	CLEAN STRAINER BASKET
	STEAM TRAP FAILURE	REPLACE STEAM TRAP
	CLOGGED CONDENSATE PIPING	CLEAN CLOGGED COMPONENT
STEAM NOT DISCHARGED FROM SAFETY VALVE	GLOBE VALVE FAILURE	REPLACE GLOBE VALVE
	CLOGGED STEAM SUPPLY PIPING	CLEAN CLOGGED COMPONENT

SECTION
PARTS LISTS

7.1 ITEM DESCRIPTIONS

ITEM DESCRIPTIONS

REG'D	DESCRIPTION	VENDOR CODE INDENT.	MFG'S MOD. NO.	INV. CONTROL NUMBER	DWG. NO.
1	DRAWOFF FAUCET 1-1/2″	35550	PROPRIETARY	440057	TS-117A
1	DRAWOFF FAUCET 2″	35550	PROPRIETARY	440019	TS-117A
1	DRAWOFF FAUCET 3″	35550	PROPRIETARY	440235	TS-117A
1	STRAINER 1-1/2″ & 2″	35550	PROPRIETARY	400270	TS-122A
1	STRAINER 3″	35550	PROPRIETARY	404939-001	TS-122A
1	SAFETY VALVE SS#	72219	10-301-50	440173	
1	FAUCET B-206	06212	B-206	440027	
1	CHAIN ASSY, SAFETY VALVE	35550	PROPRIETARY	405199	

7.2 MANUFACTURERS LIST

MANUFACTURERS' LIST

FED. MFR. CODE	MFR. & LOCATION
35550	LEGION UTENSILS CO., INC. P.O. BOX 296 AUGUSTA, GA 30901-0296
06212	T & S BRASS BRONZE CO. RT.4 OLD BUNCOMBE RD. TRAVLERS REST, SC 29690
72219	CONSOLIDATED BRASS CO. P.O. BOX 247 MATTHEWS, NC 28105

REAR SECTION

TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT(TMDER)

NOTE

Ships, training activities, supply points, depots, Naval Shipyards, and Supervisors of Shipbuilding are requested to arrange for the maximum practical use and evaluation of NAVSEA technical manuals. All errors, omissions, discrepancies, and suggestions for improvement to NAVSEA technical manuals shall be reported to the Commander, NAVSURFWARCENDIV, 4363 Missile Way, Port Hueneme, CA 93043-4307 in NAVSEA/SPAWAR Technical Manual Deficiency/ Evaluation Report (TMDER), NAVSEA Form 4160/1. To facilitate such reporting, print, complete, and mail NAVSEA Form 4160/1 below or submit TMDERS at web site http://nsdsa.phdnswc,navy.mil/tmder/tmder.htm. All feedback comments shall be thoroughly investigated and originators will be advised of action resulting therefrom. Extra copies of NAVSEA Form 4160/1 may be requisitioned from DDSP Susquehanna Pennsylvania, 05 E Street, Mechanicsburg, PA 17055-5003. (S/N 0116-LP-019-5300)

TMDER / MAILER